THE INFLUENCE OF ANTECEDENTS TO CORPORATE ENTREPRENEURSHIP ON ENTREPRENEURIAL INTENSITY: THE CASE OF SOUTH AFRICAN COMPANIES

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ABSTRACT

This purpose of this paper is to determine how the antecedents to corporate entrepreneurship (CE) influence the entrepreneurial intensity (EI) of companies operating in South Africa. Data was collected using telephone interviews with companies involved in e-business activities. The data was analysed using confirmatory factor analysis and structural equation modelling. The findings indicate management support for CE, rewards and autonomy of employees significantly influence the EI exhibited by companies. Munificent environments also showed a significant relationship with EI. However hostile environments did not achieve a significant relationship with EI, as indicated in North American entrepreneurship literature.

INTRODUCTION

Companies today are faced with a rapidly changing, hypercompetitive knowledge economy, which continuously presents opportunities and threats. Many Chief executive officers (CEOs) rate continued growth and innovation among their top concerns (Barringer & Bluedorn, 1999; Morris, Kuratko & Covin, 2008; Alegre & Chiva, 2007). Corporate Entrepreneurship (CE) has been proposed as a way to cope with the environmental challenges and manage continued innovation and growth. However the implementation of CE is challenging (Fahden, 1998; Mokoena, 1999). South African managers tasked with raising levels of innovation and entrepreneurial behaviour, are uncertain as to which antecedents influence levels of entrepreneurial behaviour.

The purpose of this paper is to determine how the antecedents to corporate entrepreneurship influence the entrepreneurial intensity of companies operating in the South African context. This paper aims to achieve this objective by firstly providing a theoretical framework and hypotheses of the antecedents to CE and the concept of entrepreneurial intensity, secondly by reporting the research design and results and finally by examining the implications for theory and managerial practice.

THEORETICAL FRAMEWORK AND HYPOTHESES

The theoretical framework proceeds by first clarifying the terms corporate entrepreneurship and entrepreneurial intensity and then discussing the internal and external antecedents to corporate entrepreneurship which have the potential to influence entrepreneurial intensity.

Corporate Entrepreneurship

Corporate entrepreneurship (CE), generally, refers to the development of new business ideas and opportunities within large and established corporations (Birkenshaw, 2003). In most cases, CE describes the total process whereby established enterprises act in an innovative, risk-taking and proactive ways (Zahra, 1993; Dess, Lumpkin & McGee., 1999; Bouchard, 2001). As such CE is a multidimensional phenomenon. Corporate venturing, intrapreneurship and strategic renewal are different components of CE (Hisrich and Peters, 2002; Covin and Slevin, 1989). In this study, the authors propose that CE be regarded as a process through which both formal and informal initiatives are encouraged, aimed at the creation of new products, services, processes and businesses to improve and sustain a company’s competitive position and financial performance.
CE as a behaviour has various outcomes. It may result in a new product, service, process or business development. CE may be chosen as a strategy to result in increased financial performance. It also leads to other non-financial benefits, such as increased morale of employees, collaboration and a creative working environment (Hayton, 2005). It may result in “new” organisations being created as “spin-out ventures” (Hornsby, Nafziger, Kuratko & Montagno, 1993; Altman and Zacharckis, 2003) or it may involve the restructuring and strategic renewal within an existing enterprise (Volberda, Baden-Fuller and Van den Bosch, 2001). Such initiatives need to be facilitated in organisations by ensuring that the environment is conducive to entrepreneurial behaviour, in other words, management need to ensure that certain antecedents (preceding factors) are in place. These antecedents can be identified in the internal environment of a company or in the external business environment of a company and depending on the presence or absence of these antecedents, more or less entrepreneurial behaviour would be possible.

Entrepreneurial Intensity

Many authors subscribe to the view that a firm’s entrepreneurial orientation can be assessed by three dimensions: innovativeness, proactiveness and risk-taking (Miller & Friesen, 1983; Covin & Slevin, 1991; Zahra, 1991; Knight, 1997). Firms can be assessed on these dimensions and the assumption underlying this concept is that firms fall along a conceptual continuum that ranges from highly conservative to highly entrepreneurial. The position of a firm on this continuum is referred to as its entrepreneurial intensity (Barringer & Bluedorn, 1999). However some authors, such as Lumpkin and Dess (1996) argue that five dimensions, not three should be used to measure entrepreneurial orientation, namely autonomy, competitive aggressiveness, proactiveness, innovativeness and risk-taking. In contrast with their views, this paper argues that autonomy is an internal antecedent to CE, which influences the organisational climate for CE. Furthermore, competitive aggressiveness forms part of the proactiveness dimension and does not represent a separate dimension. Other researchers also support this view (Morris, Allen, Schindehutte and Avilla, 2006; Kreiser et al., 2002).

The international CE literature acknowledge that innovativeness, risk-taking and proactiveness, as dimensions of the CE capability are influenced by the internal and external context of an enterprise (Ahmed, 1998; Morris & Kuratko, 2002; Hornsby et al, 2002; Zdunczyk & Blenkinsopp, 2007; Lau & Ngo, 2004; Martins & Terblanche, 2003), referred to earlier as the antecedents of CE.

Antecedents of corporate entrepreneurship

Managers’ perceptions of the internal and external environment in which they function, influence the strategic choices that are made. Although these perceptions do not always reflect the “objective reality” of the environment, they constitute the foundation that guides managerial decision-making (Zahra & Bogner, 1999:138). Capturing executives’ perceptions of the internal and external environment is a challenging task because the literature highlights multiple classifications of environmental dimensions (Dess & Rasheed, 1991). In this study the perceptions of managers were classified into internal and external antecedents.

Internal Antecedents

Throughout the CE literature a consistent set of organisational factors were identified, by a Hornsby et al. (2002). He built on the work of other authors and identified five factors namely management support for CE, autonomous employees, the use of appropriate rewards for CE, the availability of resources, especially time, and a supportive organisational structure. Based on extensive research in the field, Hornsby et al. (2002) developed and refined the Corporate Entrepreneurship Assessment Instrument (CEAI) to measure the five internal antecedents of CE in enterprises.

Management support for Corporate Entrepreneurship: captures the encouragement and willingness of managers to facilitate CE activities within an enterprise (Hornsby et al., 1993; Goosen, 2002). Management play a key role in encouraging employees to believe that innovation is expected of all organisation members. Management support can take many forms, including championing innovative ideas, recognition of people who articulate ideas, providing the necessary resources or expertise, such as seed money to kick-start ideas or institutionalising the entrepreneurial activity within the firm's system and processes (Hornsby et al., 2002). These types of support should encourage employees to
solve problems in innovative ways, seek opportunities in a proactive manner and embark on moderately risky projects.

*Autonomy of employees* refers to the discretion and extent that employees are empowered to make decisions about performing their own work in the way they believe is most effective. In entrepreneurial work environments employees are allowed to make decisions about their work process and are seldom criticised for making mistakes when innovating (Hornsby *et al.*, 2002). This tolerance of failure should breed innovative, proactive and risk-taking behaviours of employees.

*Rewards for entrepreneurship behaviour* develop the motivation of individuals to engage in innovative, proactive and moderate risk-taking behaviour (Kanter, 1989; Fry; 1987; Goosen, 2002). The use of appropriate rewards can enhance managers' willingness to assume the risks associated with entrepreneurial activity. Innovative organisations are characterised by providing rewards based on performance, offering challenges, increasing responsibilities, and promoting the ideas of innovative people throughout the organisation (Kuratko & Hodgetts, 2004).

*Time and resource availability* influence employees' perceptions of the possibility of entrepreneurial behaviour, in the sense that employees need to perceive resources as accessible for CE activities (Pinchot, 1985; Covin & Slevin, 1991; Kreiser *et al.*, 2002). For new and innovative ideas to thrive, individuals should have time to incubate their ideas. Organisations should be reasonable in assigning the workload of their employees and allow employees to work with others on long-term problem solving. In entrepreneurial work environments, employees are allowed to conduct creative, entrepreneurial experiments in a limited portion of their work time (Von Hippel, 1977; Kanter, 1989; Morris, 1998).

*Supportive organisational structure and organisational boundaries* provides the administrative mechanism by which ideas are evaluated, chosen, and implemented (Goosen, 2002). However, a bureaucratic organisational structure leads to perceived boundaries, preventing people from noticing problems outside their own jobs. People should be encouraged to look at the organisation from a holistic perspective. Organisations should avoid having standard operating procedures for all major parts of jobs and should reduce dependence on narrow job descriptions and rigid performance standards (Kuratko, Montagno & Hornsby, 1990; Hornsby *et al.*, 2002). Hence, it can be hypothesised:

**Hypothesis 1:** Internal antecedents to CE is a second-order factor that is determined by management support for CE, rewards for CE, autonomy, time availability for CE and a supportive organisational structure and limited boundaries between departments.

**External antecedents**

Enterprises should instigate innovative strategies or formulate responses to the external environment that surrounds them. An environment poses challenges and offers new opportunities, on which firms may try to capitalise by acting in creative and innovative manners. Companies in South Africa face the challenge of globalisation and the added challenge of internal transformation of the economy. Pressure from the government to transform is felt especially with the government’s policy of black economic empowerment (BEE), employment equity (Mahabane, 2005:2), the “Convergence Bill” for the ICT industry (Hartley and Worthington-Smit, 2004:12), and various other legislative reforms. These pressures create a hostile and dynamic environment in which South African enterprises are obliged to operate. These external antecedents were captured by assessing managers’ perceptions of the munificence and hostility found in the external environment.

*Munificence* refers to opportunity-rich environments, which is captured in the constructs dynamism, technological opportunities and demand for new products. These three constructs create opportunities for firms.

*Dynamism* can be understood as the perceived instability of an enterprise’s market, because of the rate of change (Lumpkin & Dess, 2001:436), unpredictability of change (Dess & Beard, 1984) and persistence of change (Zahra, 1993:222) in the enterprise’s external environment. Changes in the external environment open new windows of opportunity for firms (Antonic & Hisrich, 2001). Opportunities emerge from the dynamism of an industry where macro-environmental changes,
competitive rivalry and regulatory changes bring about new developments (Zahra, 1991; Ferreira, 2002:14). Enterprises formulate entrepreneurial strategies, such as new product developments (sustained regeneration), innovation, self-renewal or corporate venturing strategies to exploit opportunities (Zahra, 1993:322; Kreiser et al., 2002). Several studies indicate a relationship between increased dynamism in the external environment and entrepreneurial posture (Khandwalla, 1977; Miller, Burke & Glick, 1998; Covin & Slevin, 1991; Zahra, 1991, 1993, 1995). Thus increased entrepreneurship is associated with uncertain opportunity-rich environments (Löösten & Lindelöf, 2005:728).

**Technological Opportunities** refer to the perceived availability of new niches in the market for new or existing technologies. These technological opportunities create a “technological push” and could stimulate or impede CE (Zahra, 1993:322). Technological opportunities vary from one sector of the economy to another because of differences in the industry life cycle of technologies. Giarrantana (2004) analysed the founding of the encryption software industry and showed that innovation and product differentiation, along with investments in specific firm capabilities, were strongly correlated to firm growth and profitability. Zahra (1993:323) points out that companies differ with regard to their perceptions of these opportunities. These differences in perceived technological opportunities are likely to influence CE activities.

The **demand for new products** is reflected by the importance an industry places on new product development (NPD) for creating and retaining a competitive advantage. In industries where NPD is seen as a source of competitive advantage, firms will focus their investments on stimulating demand and building their capabilities to ensure market success (Elenkov et al., 2005). Zahra (1993) views a “demand pull” by the market for new products as an antecedent to corporate venturing activities. This “demand pull” may lead to process, technological and administrative innovations and force companies to redefine their business portfolios. Thus the more importance an industry places on new products, the higher levels of CE should be (Barringer & Bluedorn, 1999). Hence it can be hypothesised that:

**Hypothesis 2:** Munificence is a second-order factor that is determined by dynamism, technological opportunities and demand for new products.

**Hostility** is captured by the dimensions of competitive rivalry and unfavourable change. These changes create threats for an enterprise and contribute to creating the perception of a hostile external environment. create the perception of threats and compel enterprises to act entrepreneurially.

**Competitive Rivalry** is embodied in the intensity of competition between rivals could create threats to a company’s mission and survival and reflects the nature of competitive dynamics in an industry (Porter, 1980). Rivalry between enterprises results from competition for resources, opportunities, and customers (Dess & Beard, 1984). The existence of too many competitors increases rivalry, leads to a lack of exploitable market opportunities, tremendous competitive, market, and/or product-related uncertainties, and a general vulnerability to influences from forces in the firm’s immediate environment. These environmental conditions are harsh, and sheer survival is often viewed as a major accomplishment (Zahra & Covin, 1995:48; Antonic & Hisrich, 2001). In environments where the intensity of competition is high, firms may try to diversify their business activities and focus on additional market segments. These activities in turn lead to higher levels of CE.

**Unfavourability of change** arises from several sources such as radical industry changes, intense regulatory burdens placed on an industry, loss of investor confidence and change in corporate ownership. In addition unfavourable changes may also result from market and product-uncertainties. These threats could well motivate managers to consider bold strategic actions to outperform market expectations (Morrow et al., 2007:271). Firm responses to these environmental conditions differ. Some enterprises may decide to pursue growth strategies, such as market penetration through intensive marketing and advertising activities, in order to maintain customer loyalty. Other strategies include market development by differentiating products, or even new product development by modifying and changing existing products (Zahra, 1991:198; Ferreira, 2002:14-15). Thus, as changes in the environment become more unfavourable, firms may respond by becoming more involved in CE activities. Thus, it can be hypothesised that:

**Hypothesis 3:** Hostility is a second-order factor that is determined by competitive rivalry and unfavourable change.
The management of an enterprise would base their strategic decisions on their perceptions of the opportunities and threats in the external and internal environment. Thus, the following hypotheses can be formulated:

Hypothesis 4: The internal antecedents to corporate entrepreneurship are positively related to entrepreneurial intensity.

Hypothesis 5: The external antecedent, munificence is positively related to entrepreneurial intensity.

Hypothesis 6: The external antecedent, hostility is positively related to entrepreneurial intensity.

**RESEARCH DESIGN**

**Sample and data collection**

The sampling procedure used in this study was non-probability, judgement sampling. The study focused on a sample of companies who use e-business systems extensively for information, administrative or commercial purposes, since better insights can be gained from companies who are extensive users of e-business systems, when changes in the technological e-business environment are considered. These companies were identified as those in the ICT industry, and companies listed on the JSE, operating in South Africa. A sample was drawn from JSE listed companies in the beginning of 2005, as well as from the database of ITWeb, relating to ICT companies (Hartley, 2005; IT Web, 2005). JSE companies totalled 300 firms; while ICT companies totalled 424 firms. Nine companies appeared on both lists and, therefore, the sample comprised 715 companies. All the companies in the sample were contacted. A response rate of 20.4% was realised (146 respondents), which is comparable to other studies of this nature (Goosen, 2002; Mostert & Rathbone, 2001). Telephone interviews were conducted with key informants from August to October 2006. The key informant (respondent) for JSE companies was typically the CIO (Chief Information Officer) or IT (Information Technology) manager and for ICT companies, the CEO (Chief Executive Officer) or Sales Manager. These individuals’ responsibilities grant them a unique and comprehensive view of the e-business environment and CE activities in their firms.

The nature of the sample is described in Table 1. Table 1 shows distribution between JSE and ICT companies, the size of the companies indicated by the number of employees and the age of company, indicated by the number of years in existence. In this study the sample was profiled by looking at the sample group (JSE or ICT company), company size and company age. Listed ICT companies were grouped with the other ICT companies for the analyses that follow, since their strategies, internal culture and perceptions of the external environment are more likely to be similar to unlisted ICT companies in the same industry, as opposed to other listed companies in different industries (McGahan & Porter, 1997; Sutcliffe & Huber, 1998). Company size was measured by the number of full-time employees and company age was measured by the number of years the company was in existence.

Table 1: Composition of the sample

<table>
<thead>
<tr>
<th>Population group</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSE companies</td>
<td>92</td>
<td>63</td>
</tr>
<tr>
<td>ICT companies</td>
<td>54</td>
<td>37</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age of companies</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6 years</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>7 – 15 years</td>
<td>50</td>
<td>34</td>
</tr>
<tr>
<td>16 – 25 years</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>More than 26 years</td>
<td>42</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of companies</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 99 employees</td>
<td>53</td>
<td>36</td>
</tr>
<tr>
<td>100 – 499 employees</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>500 – 2,999 employees</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>3,000 and more employees</td>
<td>29</td>
<td>20</td>
</tr>
</tbody>
</table>

Total 146 100.0
Measures

The survey instrument included scales designed to measure the antecedents of CE and entrepreneurial intensity. Each of the multi-item measures was based on a 9-point Likert scale. Items from existing measuring instruments that proved reliable and valid in previous research studies were used, where possible. These were enhanced by questions formulated by the researcher (based on the literature) to ensure that each variable in the measurement instrument was represented by at least three items. A copy of these measures is available from the author on request.

Entrepreneurial intensity

In order to ensure the validity and reliability of the measurement instrument, it was essential to clearly define the key dimensions of the entrepreneurial intensity. Useful existing research instruments were the Entrepreneurial Performance Index (EPI) of Morris and Sexton (1996) and the ENTRESCALE (Kwandwalla, 1977; Miller & Friesen, 1983; Covin & Slevin, 1989; Knight, 1997). The ENTRESCALE was used to assess the tendencies of firms’ toward innovativeness, risk-taking and proactiveness. The mean score, calculated as the average of nine items, can be used to assess a company’s entrepreneurial intensity.

Internal antecedents (CEAI)

The internal antecedents of CE were assessed, using the Corporate Entrepreneurship Assessment Instrument (CEAI) of Hornsby et al. (2002). The CEAI was cross-culturally validated on American and Canadian managers by Hornsby et al. (2002). The five antecedents assessed by this scale are management support for CE, autonomy of employees, rewards for CE, time availability and organisational boundaries.

External antecedents

A scale, with appropriate items to assess munificence and hostility, was compiled from the literature and adapted to the South African context. Dynamism, technological opportunities and demand for new products were measured as constructs representing munificence and competitive rivalry and unfavourable change were measured as constructs representing hostility.

Analyses

Data was analysed, using descriptive statistics and structural equation modelling (SEM). The use of SEM has grown in management disciplines in recent years (See Alegre & Chiva, 2007; Venter, Boshoff & Maas, 2003). This approach involves developing measurement models to define latent variables. Confirmatory factor analysis (CFA) was used to assess the measurement model and SEM was used to assess the relationships between key variables. One rule-of-thumb for using SEM is that it should have a minimum of 100 subjects (Williams, Gavin & Hartman, 2004) and the sample used in this study exceeds that threshold. LISREL and Statistica (2007) were used to test the hypothesised model.

RESULTS

Descriptive statistics

Data analysis was conducted using Statistica (2007). Descriptive statistics (mean, standard deviation and co-efficient of variance) and correlation coefficients were used in the initial descriptive analysis (see Table 2).
Table 2: Descriptive statistics for the variables assessed

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cronbach Alpha Coefficient</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Coefficient of variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Intensity</td>
<td>0.66</td>
<td>16.75</td>
<td>3.92</td>
<td>23.4</td>
</tr>
<tr>
<td>Management support for CE</td>
<td>0.92</td>
<td>46.38</td>
<td>11.13</td>
<td>23.77</td>
</tr>
<tr>
<td>Autonomy</td>
<td>0.85</td>
<td>29.27</td>
<td>6.37</td>
<td>21.76</td>
</tr>
<tr>
<td>Rewards for CE</td>
<td>0.88</td>
<td>34.47</td>
<td>7.97</td>
<td>23.12</td>
</tr>
<tr>
<td>Time availability</td>
<td>0.47</td>
<td>23.09</td>
<td>5.66</td>
<td>24.51</td>
</tr>
<tr>
<td>Organisational boundaries</td>
<td>0.69</td>
<td>16.97</td>
<td>7.6</td>
<td>44.78</td>
</tr>
<tr>
<td>Munificence</td>
<td>0.74</td>
<td>3.25</td>
<td>0.85</td>
<td>26.25</td>
</tr>
<tr>
<td>Hostility</td>
<td>0.63</td>
<td>2.91</td>
<td>0.84</td>
<td>29.01</td>
</tr>
</tbody>
</table>

N = 146

Psychometric properties of measurement scales

The psychometric properties of the measurement scales were assessed in accordance with accepted practices (Gerbing and Anderson, 1988; Terblanche & Boshoff, 2006) and included reliability, content validity and convergent validity.

Reliability

Cronbach’s alpha coefficient was calculated to assess the internal consistency of the measurement instrument. The estimated Cronbach alpha co-efficients are shown in Table 2. They were 0.66 for entrepreneurial intensity; 0.92, 0.85, 0.88, and 0.68 for management support for CE, autonomy of employees, rewards for CE and organisational boundaries, the internal antecedents to CE; and 0.87, 0.85, 0.86 for dynamism, technological opportunities and demand for new products respectively, representing munificence. Unfavourable change and competitive rivalry achieved Cronbach alpha co-efficients of 0.82 and 0.81 respectively, representing hostility (Cronbach alpha co-efficient 0.63). These coefficients would appear to satisfy Nunally’s (1978) suggested minimum criterion for internal reliability. Coefficients lower than 0.5 are regarded as questionable, coefficients close to 0.70 as acceptable and coefficients of 0.80 as good (Sekaran, 1992). All the measures in the survey exceeded this minimum threshold with the exception of time availability (Cronbach alpha co-efficient = 0.47).

The use of Cronbach’s alpha coefficient in isolation is not recommended to evaluate the reliability of a scale. Accordingly, reliability was appraised using three indicators: Cronbach’s alpha coefficient, construct reliability and the variance extracted. Table 3 shows the reliability evaluation for each dimension.

Table 3: Confirmatory factor analysis’ reliability evaluation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variance Extracted</th>
<th>Construct Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Intensity</td>
<td>0.40</td>
<td>0.70</td>
</tr>
<tr>
<td>Internal Antecedents</td>
<td>0.39</td>
<td>0.72</td>
</tr>
<tr>
<td>External Antecedents: Munificence</td>
<td>0.71</td>
<td>0.89</td>
</tr>
<tr>
<td>External Antecedents: Hostility</td>
<td>0.57</td>
<td>0.80</td>
</tr>
</tbody>
</table>

The composite reliability values are highly satisfactory, all above 0.7 (Nunally, 1978; Hair et al., 2006); the average variance extracted indices also are close or exceed the minimum threshold of 0.5. The fit indices indicate a moderate to good fit, since they are close or met most of the recommended threshold values (Joreskog GFI = 0.96, NFI = 0.95, NNFI, = 0.90 and CFI = 0.96). The adjusted population gamma index was below, but close to the threshold of 0.95, while the RMSEA indicated a value of 0.11, above the recommended threshold of 0.10 of Hair et al. (2006:747-746). The CFA results showed moderate fit.
Validity
Validity refers to the extent to which an item or set of measures correctly represent the constructs of a study. It is therefore concerned with how well the construct is defined by the item(s) (Hair, Bush & Ortinau, 2000).

Content validity was established by developing measures from well-grounded theory. Although entrepreneurship is an established research topic, the resurgence of interest in entrepreneurship is a fairly recent phenomenon (Wortman, 1987). Thus, although the CE capability construct measure has good reliability and has performed well in previous studies, it is based on a stream of literature that is still developing. Similarly, the internal factors of a supportive organisational climate included in the study, is based on recent literature (Hornsby et al., 2002). As a result, the theoretical validity of the CE construct is still in its formative stage.

CFA was used to establish convergent validity by confirming that all scale items loaded significantly on their hypothesised construct factors (Hair et al, 2006). The standardized factor loadings were all significant and above the recommended minimum of 0.40, except for time availability and organisational boundaries (Ford et al, 1986). On the basis of these analyses it was decided to exclude time availability and organisational boundaries from further analysis.

Test of the research hypotheses
The initial specified theoretical model needed to be adapted to exclude time availability and organisational boundaries as internal antecedents to entrepreneurial intensity. The subsequent SEM still indicated weak fit. A possible explanation for the weak fit achieved, could perhaps be incorrect model specification. The hostility construct showed low path scores and was therefore omitted for the subsequent model. The resultant SEM is shown in Figure 1.

Joreskog GFI = 0.96; NFI = 0.94; NNFI = 0.99; CFI = 0.99; RMSEA = 0.03
Parameter estimates are standardised. All parameter estimates are significant at 95% confidence interval (t>1.96).

Figure 1: A representation of the modified SEM for entrepreneurial intensity and the internal and munificence antecedents

Figure 1 illustrates that the exogenous constructs, internal antecedents and munificence influence the endogenous variable, entrepreneurial intensity. The internal antecedents were measured by management support for CE (MS); autonomy of employees (Au) and rewards for CE (R). The munificence construct, was measured by dynamism (Dy), technological opportunities (TO) and the demand for new products (Dn). The endogeneous construct entrepreneurial intensity (EI) is measured by innovativeness (I), proactiveness (P), and risk-taking (RT). The model shown in Figure 1 was tested, using Statistica 7.1 (Statsoft, 2007), LISREL and PLS. The internal antecedent construct has a
significant influence (0.45) on entrepreneurial intensity, while munificence also exerts a significant influence (0.21) on entrepreneurial intensity, although its influence is not as strong as that of the internal antecedent construct. This finding suggests that that EI is a construct that could be managed and improved by focusing on the internal antecedents to CE, namely management support for CE, rewards for CE and allowing employees to function autonomously, as well as increasing the perception of opportunities (munificence) in the external environment.

The multiple fit indices of the SEM were used to evaluate fit based on multiple fit statistics, so that judgments will not be an artefact of analytical choice (Grimm & Yarhold, 2000). The overall model achieved a value of 0.96 for the Joreskog GFI, which meets the threshold of 0.90. The values for NFI, NNFI and CFI were 0.94, 0.99 and 0.99 respectively. These values exceed the recommended threshold of 0.90. The Adjusted Population Gamma Index was 0.99, which exceeds the recommended threshold for this fit index of 0.95. Finally, the RMSEA value of the overall model was 0.03, which is below the recommended threshold value of being below 0.05 to 0.10 (Hair et al., 2006:747). To summarise, all the fit indices indicated exceed the recommended guidelines for good fit and, therefore, it could be concluded that the model reflects good measurement and statistical fit.

The previous statistical analysis aids in assessing the hypotheses. The measurement model results indicate that there is a positive and significant relationship between the internal antecedents to CE and management support for CE, autonomy and rewards for CE. Hypothesis 1 is therefore not supported. The measurement model results indicate that there is a positive and significant relationship between the external antecedent munificence and its dimensions dynamism, technological opportunities and demand for new products. These results support hypothesis 2. A positive, significant relationship was also found between the external antecedent hostility and its dimensions competitive rivalry and unfavourable change, therefore hypothesis 3 is supported.

Regarding the interrelationship between constructs the SEM results show a positive, statistically significant relationship between the internal antecedents to CE and entrepreneurial intensity, therefore hypothesis 4 is supported. A positive, statistically significant relationship exists between munificence and entrepreneurial intensity, therefore hypothesis 5 is supported and finally no statistically significant relationship was found between the external antecedent hostility and entrepreneurial intensity, therefore hypothesis 6 is not supported.

DISCUSSION OF RESULTS AND CONCLUSION

The purpose of this paper was to determine how the antecedents to corporate entrepreneurship influence the entrepreneurial intensity of companies operating in the South African context. The results of this study suggest that the dimensions of the CE capability are most strongly influenced by the internal antecedents to CE - management support for CE, autonomy of employees and rewards for CE. Munificent environments also achieved a significant relationship with entrepreneurial intensity. In other words, managers held perceptions that environments were dynamic, filled with technological opportunities and that the market demanded new products. These perceptions of the external environment contribute to entrepreneurial behaviour. However, hostile environments did not achieve a significant relationship with the entrepreneurial intensity exhibited by these companies.

The results suggest that managers are able to exert a significant influence on the entrepreneurial intensity found in companies, by creating a pro-entrepreneurship culture, through commitment and support to the entrepreneurial process, designing autonomous jobs and rewarding entrepreneurial behaviour. Perceptions of opportunity-rich environments also contribute to entrepreneurial intensity.

Surprisingly, hostile environments did not influence entrepreneurial intensity as the North American literature suggests. The reason for this could be that the competitive structure of the South African economy differs from the economy of the United States of America. The implication of this finding is that entrepreneurship concepts should first be assessed and adapted to a specific local context, before managerial decisions are taken and implemented, based on international evidence. However, caution should be exercised when generalising these results, since a judgement, non-probability sample was used and only one respondent per company participated in the survey.

Although this study had certain limitations several avenues for further research exist. Avenues that have both practical and academic relevance are subsequently identified. This paper reports on a study
where a large-scale empirical survey was conducted. It appears that few surveys have focused on the CE capability of a large number of companies in South Africa. Resource limitations only allowed for data collection of one respondent per company. It is suggested that further research triangulate the views of one respondent with secondary sources or use multiple respondents per company. Furthermore, since CE is such a comprehensive topic, the focus of the broader study was on e-business. Therefore, caution should be exercised in generalising the findings. Future research should test these findings across sectors, company size and age. It is also suggested that future research should focus on identifying and measuring other organisational factors that can inhibit the CE capability, such as barriers to CE; physical resource availability, priorities in organisations and that the role of the individual within the process relative to role of organisational factors be studied. In this way a more accurate predictive model can be constructed to manage the CE capability.

In conclusion, this study contributes to CE practice and theory. Even though CE has been studied widely in the United States of America (USA) and to some degree in other developed and transitional economies, little research has examined the role of CE in an African context. South Africa's level of economic development and economic activity relative to other African countries made it a suitable context for this type of study. It is recommended that further research be conducted to ascertain to what extent the antecedents to CE influence the entrepreneurial intensity of companies in other emerging economies and to explain the difference between countries.

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